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Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Original) In a network including a plurality of relay stations and a parent station which are connected with each other through a transmission line, a path setting method for generating paths from the parent station to respective ones of the relay stations, the path setting method comprising the steps of:

allowing each of the parent station and the plurality of relay stations to transmit a basic-information notification signal to the network at a first time interval by means of a repetitive broadcast, the basic-information notification signal containing basic information which includes an identifier identifying its own station and the status of the path setting to its own station;

allowing, in response to receiving the basic-information notification signal, each of the parent station and the plurality of relay stations to detect a receiving state and calculate a transmission quality on a transmission line interconnecting with the station which has transmitted the basic-information notification signal, in accordance with the receiving state;

allowing each of the parent station and the plurality of relay stations to create or update a receiving-environment table correlating the basic information contained in the basic-information notification signal to the transmission quality on the transmission line interconnecting with the station

which has transmitted the basic-information notification signal, and store the created or updated receiving-environment table therein;

allowing each of the plurality of relay stations to repeatedly refer to the path-setting status in the receiving-environment table at a second time interval greater than the first time interval, and, when the reference result shows that temporary-path setup information representing the completion of setting a temporary path exists in the path-setting status, transmit a receiving-environment-table communication signal containing the receiving- environment table of its own station through the transmission line used for transmitting the basic-information notification signal containing the temporary-path setup information;

allowing, in response to receiving the receiving-environment-table communication signal, each of the plurality of relay stations to forward the received receiving-environment- table communication signal to the parent station through the use of the temporary path;

allowing, in response to receiving the receiving-environment-table communication signal, the parent station to create or update a transmission-quality table correlating the inter-station transmission line to the transmission quality thereof, in accordance with the identifier and the transmission quality contained in the receiving-environment-table communication signal, and store the created or updated transmission-quality table therein;

allowing, in response to receiving the receiving-environment-table communication signal, the parent station to set a temporary path to the relay station which has transmitted the receiving-environment-table communication

signal, and return a temporary-path setup information containing the temporary path to the relay station; and

allowing, in response to a lapse of a third time period greater than the second time interval, the parent station to set the paths to respective ones of the plurality of relay stations, in accordance with the transmission qualities in the transmission-quality table, and transmit the set paths to respective ones of the plurality of relay stations.

2. (Original) The path setting method as defined in claim 1, further comprising the steps of:

allowing an additional relay station which is newly added to the network, to transmit the basic-information notification signal to the network by means of a broadcast;

allowing, in response to receiving the basic-information notification signal from the additional relay station, the existing relay station to return the basic-information notification signal containing the basic information of its own station to the additional relay station;

allowing, in response to receiving the basic-information notification signal returned from the existing relay station, the additional relay station to detect a receiving state and calculate a transmission quality on a transmission line interconnected with the existing relay station which has returned the basic-information notification signal, in accordance with the receiving state;

allowing the additional relay station to create or update a receiving-environment table correlating the basic information contained in the basic-

information notification signal returned from the existing relay station to the transmission quality on the transmission line interconnecting with the existing relay station which has returned the basic-information notification signal, and store the created or updated receiving-environment table therein;

allowing the additional relay station to refer to the transmission quality in the receiving-environment table, and transmit a receiving-environment-table communication signal containing the receiving-environment table of its own station to the parent station through the transmission line having the best transmission quality determined by the reference result;

allowing, in response to receiving the receiving-environment-table communication signal from the additional relay station, the parent station to update the transmission-quality table in accordance with the identifier and the path-setting status contained in the receiving-environment-table communication signal, and store the updated transmission-quality table therein; and

allowing the parent station to set the paths to respective ones of the plurality of relay stations including the additional relay station, in accordance with the transmission qualities in the transmission-quality table, and transmit the set paths to respective ones of the plurality of relay stations including the additional relay station.

3. (Original) The path setting method as defined in claim 1, further comprising the steps of:

allowing a child station which is newly added to the network, to transmit the basic-information notification signal to the network by means of a broadcast;

allowing, in response to receiving the basic-information notification signal from the child station, the relay station to return the basic-information notification signal containing the basic information of its own station to the child station;

allowing, in response to receiving the basic-information notification signal returned from the relay station, the child station to detect a receiving state and calculate a transmission quality on a transmission line interconnecting with the relay station which has returned the basic-information notification signal, in accordance with the receiving state;

allowing the child station to create or update a receiving-environment table correlating the basic information contained in the basic-information notification signal returned from the relay station to the transmission quality on the transmission line interconnecting with the relay station which has returned the basic-information notification signal, and store the created or updated receiving-environment table therein;

allowing the child station to refer to the transmission quality in the receiving-environment table, and transmit a receiving-environment-table communication signal containing the receiving-environment table of its own station to the parent station through the transmission line having the best transmission quality determined by the reference result; and

allowing, in response to receiving the receiving-environment-table communication signal from the child station, the parent station to set a path to the child station in accordance with the path used for transmitting the receiving-environment-table communication signal, and transmit the set path to the child station.

4. (Original) The path setting method as defined in claim 1, further comprising the steps of:

allowing each of the parent station and the plurality of relay stations when receiving a communication signal from another station, to detect a receiving state and calculate a transmission quality on a transmission line interconnecting with the another station, in accordance with the receiving state;

allowing the parent station to collect the transmission qualities from the plurality of relay stations;

allowing the parent station to re-set the paths to respective ones of the plurality of relay stations, in accordance with the collected transmission qualities;

allowing the parent station to comparing the paths to respective ones of the plurality of relay stations before the re-setting with the re-set paths to respective ones of the plurality of relay stations; and

allowing the parent station to present the comparison result.

5. (Original) The path setting method as defined in claim 1, wherein the transmission line is either a wireless line or a distribution line for supplying electric power.

6. (Original) The path setting method as defined in claim 1, wherein the transmission quality on the transmission line is a PLR value calculated from the receiving state of the transmission line, a packet length of the communication signal, and a communication rate of the transmission line.

7. (Original) A network including a plurality of relay stations and a parent station which are connected with each other through a transmission line, the network being configured to generate paths from the parent station to respective ones of the relay stations,

wherein each of the relay stations comprises:

a first communication section operable to transmit and receive a communication signal to/from the network, and detect a receiving state of the communication signal;

a first processing section operable to transmit a basic-information notification signal to the network using the first communication section at a first time interval by means of a repetitive broadcast, the basic-information notification signal containing basic information which includes an identifier identifying its own station and the status of the path setting to its own station;

a second processing section operable to calculate a transmission quality on a transmission line interconnecting with the station which has transmitted the basic-information notification signal, in accordance with the receiving state;

a third processing section operable to create or update a receiving-environment table correlating the basic information contained in the basic-information notification signal to the transmission quality on the transmission line interconnecting with the station which has transmitted the basic-information notification signal, and store the created or updated receiving-environment table in a receiving-environment-table storage section thereof;

a fourth processing section operable to repeatedly refer to the path-setting status in the receiving-environment table at a second time interval greater than the first time interval, and, when the reference result shows that temporary-path setup information representing the completion of setting a temporary path exists in the path-setting status, transmit a receiving-environment-table communication signal containing the receiving-environment table of its own station through the transmission line used for transmitting the basic-information notification signal containing the temporary-path setup information; and

a fifth processing section operable, in response to receiving the receiving- environment-table communication signal, to forward the received receiving-environment-table communication signal to the parent station through use of the temporary path, and

the parent station comprises:

a second communication section operable to transmit and receive a communication signal to/from the network, and detect a receiving state of the communication signal;

a sixth processing section operable to transmit a basic-information notification signal to the network using the second communication section at the first time interval by means of a repetitive broadcast, the basic-information notification signal containing basic information which includes an identifier identifying its own station and the status of the path setting to its own station;

a seventh processing section operable to calculate a transmission quality on a transmission line interconnecting with the station which has transmitted the basic-information notification signal, in accordance with the receiving state;

an eighth processing section operable to create or update a receiving- environment table correlating the basic information contained in the basic-information notification signal to the transmission quality on the transmission line interconnecting with the station which has transmitted the basic-information notification signal, and store the created or updated receiving-environment table in a receiving-environment-table storage section thereof;

a ninth processing section operable, in response to receiving the receiving- environment-table communication signal, to create or update a transmission-quality table correlating the inter-station transmission line to the transmission quality thereof, in accordance with the identifier and the transmission quality contained in the receiving-environment-table communication

signal, and store the created or updated transmission-quality table in a transmission-quality-table storage section thereof;

a tenth processing section operable, in response to receiving the receiving- environment-table communication signal, to set a temporary path to the relay station which has transmitted the receiving-environment-table communication signal, and return a temporary- path notification communication signal containing the temporary path to the relay station using the second communication section; and

an eleventh processing section operable, in response to a lapse of a third time period greater than the second time interval, to set the paths to respective ones of the plurality of relay stations, in accordance with the transmission qualities in the transmission-quality table, and transmit the set paths to respective ones of the plurality of relay stations using the second communication section.

8. (Original) A relay station applicable to a network including a plurality of relay stations and a parent station which are connected with each other through a transmission line, the network being configured to generate paths from the parent station to respective ones of the relay stations, the relay station comprising:

a first communication section operable to transmit and receive a communication signal to/from the network, and detect a receiving state of the communication signal;

a first processing section operable to transmit a basic-information notification signal to the network using the first communication section at a first time interval by means of a repetitive broadcast, the basic-information notification signal containing basic information which includes an identifier identifying its own station and the status of the path setting to its own station;

a second processing section operable to calculate a transmission quality on a transmission line interconnecting with the station which has transmitted the basic-information notification signal, in accordance with the receiving state;

a third processing section operable to create or update a receiving-environment table correlating the basic information contained in the basic-information notification signal to the transmission quality on the transmission line interconnecting with the station which has transmitted the basic-information notification signal, and store the created or updated receiving-environment table in a receiving-environment-table storage section thereof;

a fourth processing section operable to repeatedly refer to the path-setting status in the receiving-environment table at a second time interval greater than the first time interval, and, when the reference result shows that temporary-path setup information representing the completion of setting a temporary path exists in the path-setting status, transmit a receiving- environment-table communication signal containing the receiving- environment table of its own station through the transmission line used for transmitting the basic-information notification signal containing the temporary-path setup information; and

a fifth processing section operable, in response to receiving the receiving- environment-table communication signal, to forward the received receiving-environment-table communication signal to the parent station by use of the temporary path.

9. (Currently Amended) A parent station applicable to a network including a plurality of relay stations and a parent station which are connected with each other through a transmission line, the network being configured to generate paths from the parent station to respective ones of the relay stations, the parent station comprising:

a second communication section operable to transmit and receive a communication signal to/from the network, and detect a receiving state of the communication signal;

a sixth processing section operable to transmit a basic-information notification signal to the network using the second communication section at the first time interval by means of a repetitive broadcast, the basic-information notification signal containing basic information which includes an identifier identifying its own station and the status of the path setting to its own station;

a seventh processing section operable to calculate a transmission quality on a transmission line interconnecting with the station which has transmitted the basic-information notification signal, in accordance with the receiving state;

an eighth processing section operable to create or update a receiving-environment table correlating the basic information contained in the

basic-information notification signal to the transmission quality on the transmission line interconnecting with the station which has transmitted the basic-information notification signal, and store the created or updated receiving-environment table in a receiving-environment-table storage section thereof;

a ninth processing section operable, in response to receiving a ~~the~~ receiving- environment-table communication signal containing the receiving-environment table of the relay station, to create or update a transmission-quality table correlating the inter-station transmission line to the transmission quality thereof, in accordance with the identifier and the transmission quality contained in the receiving- environment-table communication signal, and store the created or updated transmission-quality table in a transmission-quality-table storage section thereof;

a tenth processing section operable, in response to receiving the receiving- environment-table communication signal, to set a temporary path to the relay station which has transmitted the receiving-environment-table communication signal, and return a temporary- path notification communication signal containing the temporary path to the relay station using the second communication section; and

an eleventh processing section operable, in response to a lapse of a third time period greater than the second time interval, to set the paths to respective ones of the plurality of relay stations, in accordance with the transmission qualities in the transmission-quality table, and transmit the set paths to respective ones of the plurality of relay stations using the second communication section.